Space Weather Forecast

Issued on Monday, 30 October 2023 at 13:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Slight chance of G1/Minor Storms on days 1 and 2 (30th/31st Oct)

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with a few common class flares from a moderately large and complex region in the southern central disc, which continues to grow and mature. There are two further small but moderately complex regions on the disc, which have shown minor growth during the period.
No Earth-directed Coronal Mass Ejections (CMEs) have been observed in the available imagery during the period.

Solar Wind / Geomagnetic Activity: Solar wind speeds have remained elevated between 530 and 600 km/s, but with a slight declining trend, as Earth remains under the influence of a coronal hole fast wind. The total magnetic field strength has been weak, with only weak fluctuations in the important north-component. Geomagnetic activity has been Quiet to Active (Kp 1-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low solar activity is expected. There is a slight chance of isolated Moderate activity, most likely from AR3474.

Solar Wind / Geomagnetic Activity: There are no Earth directed CMEs. A fast solar wind is currently connected to the Earth, giving solar wind speeds around 550 km/s. Speeds are expected to have peaked and should decline to slow levels through the period. Unsettled to Active geomagnetic activity is expected to become increasingly Quiet throughout the period. There is a slight chance of isolated G1/Minor Geomagnetic Storm intervals on day 1 into day 2 (30th and 31st October).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	25	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	2	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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